REMARKS

Claims 1-5 are pending in this application. By this Amendment, the specification is amended. Support for the amendments to the specification can be found in the specification as originally filed. No new matter is added by these amendments.

I. Objection to the Specification

The Office Action objects to the specification for the use of claim numbers in the disclosure. While Applicants do not necessarily agree with this objection, the specification has been amended herein to remove claim numbers from the disclosure. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

II. Claim Rejections Under 35 U.S.C. §103

A. Claims 1-4

The Office Action rejects claims 1-4 under 35 U.S.C. §103(a) over U.S. Patent No. 5,853,869 to Adachi et al., in view of U.S. Patent Application Publication No. 2001/0024685 to Boulton et al. Applicants respectfully traverse the rejection.

Independent claim 1 sets forth a "transparent conductive layered structure, comprising a transparent substrate and a transparent two-layered film being composed of a transparent conductive layer and a transparent coat layer being formed in succession on the transparent substrate, wherein the transparent conductive layer comprises, as its main components, conductive microparticles having a mean particle diameter of 1 to 100 nm and a binder matrix of silicon oxide, and wherein the transparent coat layer comprises, as its main component, a binder matrix of silicon oxide including one or more types of alkyl groups selected from long chain alkyl groups containing 7 to 30 carbon atoms." Claims 2-4 depend from claim 1 and incorporate all of the limitations thereof.

The Office Action takes the position that all of the features of claim 1 and its dependent claims 2-4 are either taught or suggested by Adachi, in combination with Boulton.

In particular, the Office Action asserts that Adachi allegedly teaches a transparent conductive film, which includes fine particles of noble metal oxides in a silicate matrix, with a silicate overcoat layer, the composition of which is not specifically defined. The Office Action asserts that Boulton discloses protective coating layers including a silicon oxide precursor that includes C_1-C_{20} alkyls. The Office Action takes the position that the combination of Adachi and Boulton would have rendered claim 1, and its dependent claims 2-4 obvious. Applicants respectfully disagree.

Adachi discloses conductive thin films that consist of a layer including indium tin oxide fine particles dispersed in a silicate-based matrix and an overcoating silicate film layer. *See* Adachi, Abstract. The silicates in the overcoating layer taught by Adachi are the dehydration condensation polymerization product of silanols and/or hydrolyzed ortho-alkyl silicates. *See* Adachi, col. 6, lines 13-30. In particular, Adachi teaches that its silicate layer is formed from ethyl silicate, a C_2 compound. *See* Adachi, col. 6, line 60 - col. 18, line 53. The Adachi silicate polymer is sintered after film formation to form a hard silicate. *See* Adachi, col. 6, lines 27-56. One of skill in the art would have understood that the alcohol and alkoxy groups, which are volatile, that are liberated during the condensation polymerization would vaporize during condensation polymerization and sintering.

The Office Action admits that Adachi does not disclose or suggest at least the feature that the "transparent coat layer comprises, as its main component, a binder matrix of silicon oxide including one or more types of alkyl groups selected from long chain alkyl groups containing 7 to 30 carbon atoms," as set forth in claim 1. Accordingly, Adachi alone cannot support a rejection of claim 1 and its dependent claims 2-4. Boulton does not remedy the shortcomings of Adachi.

Boulton teaches a protective multicomponent coating that uses a silicon oxide precursor represented by $R'_nSi(Y)_{4-n}$, in which n=1-3, Y is a hydrolyzable group and R' can be

a C_1-C_{20} alkyl group. *See* Boulton, paragraph [0021]. The Boulton coating is prepared by applying a silicon oxide precursor coating solution to a substrate, allowing the coating solution to dry by evaporation of volatile solvents, and firing the coating in an oxidizing atmosphere to burn off residual organic groups. *See* Boulton, paragraph [0033]. That is, the coating is heated to remove any remaining C_1-C_{20} alkyl groups.

In contrast, claim 1 requires that the "transparent coat layer comprises, as its main component, a binder matrix of silicon oxide including one or more types of alkyl groups selected from long chain alkyl groups containing 7 to 30 carbon atoms." That is, long chain alkyl groups included in the silicon oxide binder resin are present in the silicon oxide binder resin of claim 1. These highly hydrophobic groups are oriented on the external surface and improve the abrasion resistance of the layer. *See* Specification, page 14, line 21 - page 15, line 15; page 24, line 7 - page 25, line 2.

Because, like Adachi, Boulton teaches baking or firing its coating composition, which removes residual organic groups, Boulton also does not disclose or suggest at least the feature that the "transparent coat layer comprises, as its main component, a binder matrix of silicon oxide including one or more types of alkyl groups selected from long chain alkyl groups containing 7 to 30 carbon atoms," as set forth in claim 1.

Combining Adachi and Boulton would not motivate one of ordinary skill to prepare a transparent conductive layered structure as set forth in claim 1. Both Adachi and Boulton teach baking or firing the coating composition, which produces a hard silicate coat and removes residual organic components from the overcoat, as specifically taught by Boulton. *See* Adachi, col. 6, lines 27-56; Boulton, paragraph [0033]. Thus, one of ordinary skill, combining Adachi and Boulton, would not be motivated to prepare a transparent conductive layered structure including a transparent coat layer that "comprises, as its main component, a

binder matrix of silicon oxide including one or more types of alkyl groups selected from long chain alkyl groups containing 7 to 30 carbon atoms," as set forth in claim 1.

For at least these reasons, Applicants respectfully submit that claim 1 and its dependent claims 2-4 are patentable over Adachi and Boulton, individually and in combination. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

B. Claims 1-5

The Office Action rejects claims 1-5 under 35 U.S.C. §103(a) over U.S. Patent No. 6,261,479 to Yukinobu et al., in view of U.S. Patent Application Publication No. 2001/0024685 to Boulton et al. Applicants respectfully traverse the rejection.

The Office Action takes the position that all of the features of claim 1 and its dependent claims 2-5 are either taught or suggested by Yukinobu, in combination with Boulton. In particular, the Office Action asserts that Yukinobu allegedly teaches a transparent electro conductive film, which includes fine particles of noble metal oxides in a silicate matrix, with a transparent overcoat layer, the composition of which is not specifically defined. The Office Action asserts that Boulton discloses protective coating layers including a silicon oxide precursor that includes C_1-C_{20} alkyls. The Office Action takes the position that the combination of Yukinobu and Boulton would have rendered claim 1, and its dependent claims 2-5 obvious. Applicants respectfully disagree.

Yukinobu discloses transparent electro-conductive structures that consists of a transparent substrate, a transparent electro-conductive layer including noble metal coated silver fine particles dispersed in a binder matrix and a transparent coat layer. *See* Yukinobu, Abstract. The transparent coat layer taught by Yukinobu is formed from a silica sol that is the product of a substantially complete dehydration condensation polymerization of alkyl silicates. *See* Yukinobu, col. 11, lines 45-47; col. 12, lines 24-53. The Yukinobu silica sol

overcoat is heated after film formation to form a hard silicate. *See* Yukinobu, col. 11, lines 34-44. As discussed above with regard to Adachi, one of skill in the art would have understood that the alcohol and alkoxy groups liberated during the condensation polymerization to form the Yukinobu overcoat layer would vaporize during condensation polymerization and heating.

In contrast, claim 1 requires that the "transparent coat layer comprises, as its main component, a binder matrix of silicon oxide including one or more types of alkyl groups selected from long chain alkyl groups containing 7 to 30 carbon atoms." That is, alkyl groups included in the silicon oxide binder resin are not vaporized or removed. Instead, long chain alkyl groups are present in the silicon oxide binder resin of claim 1, and these highly hydrophobic groups are oriented on the external surface and improve the abrasion resistance of the layer. *See* Specification, page 14, line 21 - page 15, line 15; page 24, line 7 - page 25, line 2.

Since the alkyl groups of Yukinobu overcoat layer would have been understood to vaporize and thus would not be present in the overcoat layer, Yukinobu does not disclose or suggest at least the feature that the "transparent coat layer comprises, as its main component, a binder matrix of silicon oxide including one or more types of alkyl groups selected from long chain alkyl groups containing 7 to 30 carbon atoms," as set forth in claim 1. Accordingly, Yukinobu alone cannot support a rejection of claim 1 and its dependent claims 2-5. Boulton does not remedy the shortcomings of Yukinobu.

As discussed above, Boulton does not disclose or suggest at least the feature that the "transparent coat layer comprises, as its main component, a binder matrix of silicon oxide including one or more types of alkyl groups selected from long chain alkyl groups containing 7 to 30 carbon atoms," as set forth in claim 1.

Combining Yukinobu and Boulton would not motivate one of ordinary skill to prepare a transparent conductive layered structure as set forth in claim 1. Both Yukinobu and Boulton teach heating or firing the coating composition, which produces a hard silicate coat and which Boulton specifically teaches removes residual organic components from the overcoat. *See* Yukinobu; col. 11, lines 24-44; Boulton, paragraph [0033]. Thus, one of ordinary skill, combining Yukinobu and Boulton, would not be motivated to prepare a transparent conductive layered structure including a transparent coat layer that "comprises, as its main component, a binder matrix of silicon oxide including one or more types of alkyl groups selected from long chain alkyl groups containing 7 to 30 carbon atoms," as set forth in claim 1.

For at least these reasons, Applicants respectfully submit that claim 1 and its dependent claims 2-5 are patentable over Yukinobu and Boulton, individually and in combination. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-5 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

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Date: April 1, 2005

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